RAIL Operations

References

FM 55-65, *Strategic Deployment*

FORSCOM/ARNG Regulation 55-1, *Unit Movement Planning*

TM 55-2200-001-12, *Application of Blocking, Bracing, Tiedown Materials for Rail Transport*

MTMCTEA PAM 55-19, *Tie-Down Handbook for Rail Movements*

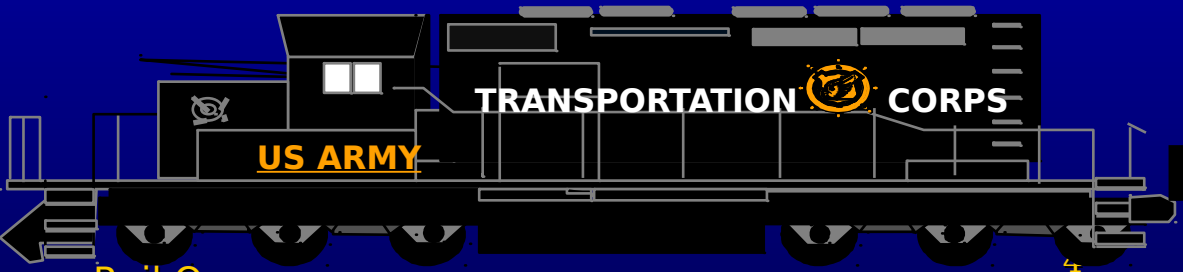
Surface Transportation

- What if unit equipment is non-roadable?.... or is beyond organic lift capability.... or is beyond 400 mile motor march criteria?

…Then you must depend upon commercially provided service ….
…. like rail!

Responsibilities -- General

- The deploying unit & installation both have planning and execution responsibilities for major rail activities
  - Rail loading/unloading
  - Rail site preparation
  - Restraining Material
  - Rail car inspection



Unit Responsibilities

- Unit commander: Overall responsible for preparing unit for rail operations
- Major unit responsibilities:
  - Prepare rail movement plan
  - Determine rail movement requirements
  - AUEL to DEL
  - Prepare equipment for rail movement
  - Load railcars

Unit Responsibilities (Cont)

- Specific responsibilities:
  - Appoint an OIC for the rail operation
  - Designate safety officer
  - Coordinate with Director of Public Works for blocking and bracing material
  - Provide trained load teams

Unit Responsibilities (Cont)

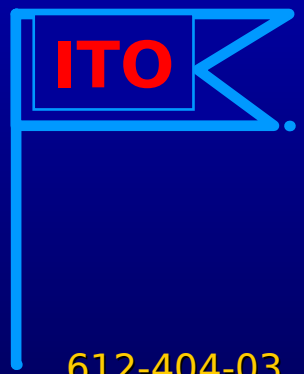
- Ensure vehicles are properly prepared/configu
  Removing canvas and bows
- Securing moving vehicle parts
  Use FORSCOM/ARNG 55-1 & MTMCTEA Pam 55-19
- Coordinate logistical support for railhead ops
  Lighting, latrines, mess, and medical

Unit Responsibilities (Cont)

- Ensure tie-down teams have proper equipment
- Stage equipment
- Ensure sufficient numbers of cars are spotted
- Inspect rail cars
- Conduct safety briefings
- Prepare rail cars for loading
- Load equipment on rail cars

Installation Transportation Office Responsibilities

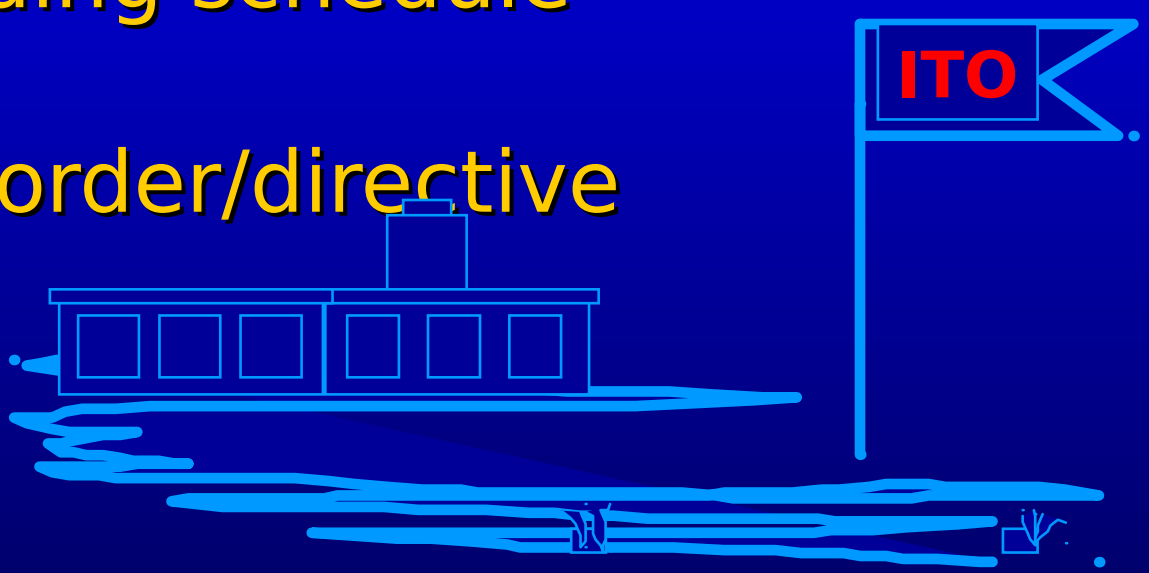
- Computes railcars based on the shipping configuration of the equipment
- Orders rail cars based on deploying unit requirements.
- Inspects rail cars IAW AAR rules.
- Provides technical supervision for rail loading operations
- Liaison between MTMC and rail agent



Installation Transportation Office Responsibilities (Cont)

- Notifies the Unit on type and quantity of railcars, and railcar arrival schedule

- Maintains rail loading schedule according to the movement order/directive



Director of Public Works (DPW)

- Provides B & B materials for deploying units
- Deploying units must determine requirements & provide in advance to the DPW.

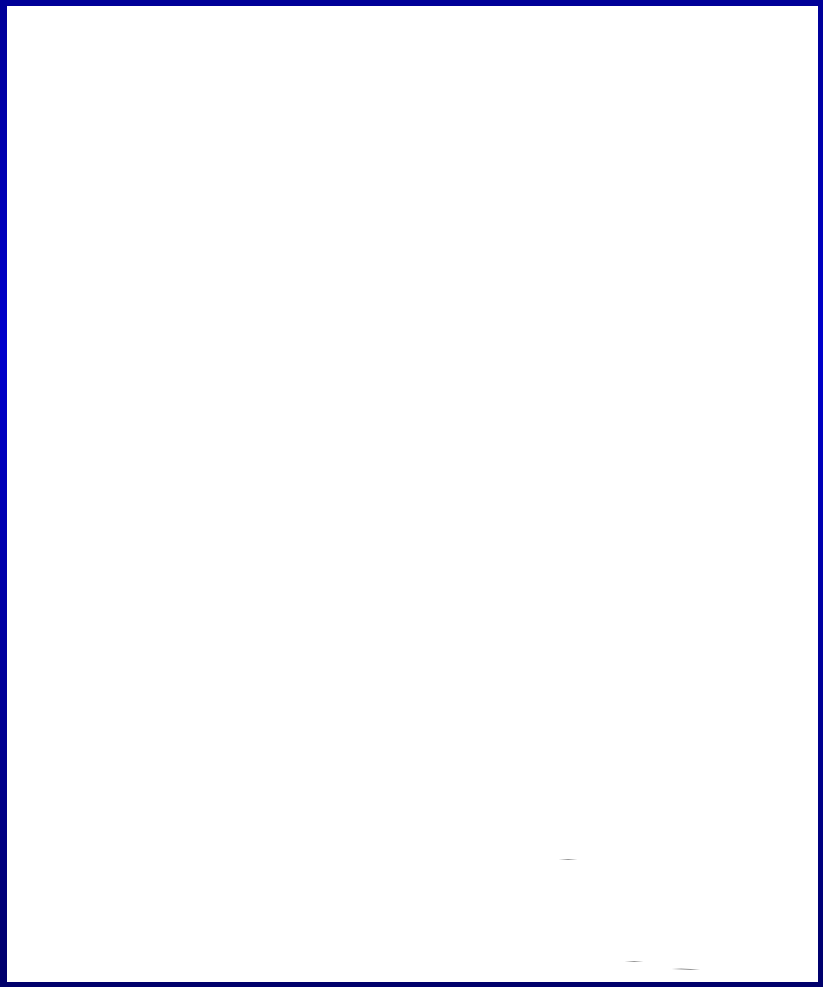
Rail Carrier Representative Responsibilities

- Joint inspection with ITO rep before cars positioned at loading ramp
- Inspection following railcar loading to ensure:

Loaded railcars comply with AAR rules

Rail Load Plan -- FORSCOM Form 285-5-R

- Provides worksheet to
- TCAIS provides automated rail load planning capability



Railcar Requirements

- Rail cars are obtained by ITO in the types and quantities required, based upon the deploying unit's requirements

- Deployment may be by commercial or "DODX" railcars

TM 55-2200-001-12


THE
OFFICIAL
RAILWAY
EQUIPMENT
REGISTER®

FREIGHT CONNECTIONS &
FREIGHT CARS OPERATED
BY THE RAILROADS
AND PRIVATE CAR COMPANIES
OF NORTH AMERICA

Vol. 115, No. 5 January 1998

- In TM 55-2200-001-12 (extract H-1), The Official Railway Equipment Register table is used to determine the types of rail cars needed, and their associated capacity and dimensions

TM 55-2200-001-12 -- Extract H-1

310

DEPARTMENT OF DEFENSE, MILITARY TRAFFIC MANAGEMENT COMMAND-WASHINGTON, D.C. 20315.

7-85

Reporting Marks and ACI Nos.—DODX - 1 158

GENERAL OFFICES: Headquarters, Military Traffic Management Command, Eastern Area, Attn: MTE-INR-M, Military Ocean Terminal, Bayonne, NJ 07002 (201)823-6411-6412-6413

FREIGHT EQUIPMENT

Cars are marked "DODX" and are numbered and classified as follows:

Line No.	A.A.R. Mech. Desig.	DESCRIPTION See Explanation Pages for Abbreviations & Symbols	A.A.R. Car Type Code	NUMBERS ▶Change from Previous Issue	DIMENSIONS INSIDE Length ft. in.	INSIDE Width ft. in.	INSIDE Height ft. in.	OUTSIDE Length ft. in.	OUTSIDE Width At Eaves or Top of Sides or Platform ft. in.	OUTSIDE Width Extreme Width ft. in.	OUTSIDE Height from Rail To Extreme Width ft. in.	OUTSIDE Height from Rail To Eaves or Top of Sides or Platform ft. in.	OUTSIDE Height from Rail To Extreme Height ft. in.	DOORS Side Width of Open'g ft. in.	DOORS Side Height of Open'g ft. in.	CAPACITY Cubic Feet Level Full	CAPACITY Lbs. (000)	No. of Cars
		DODX																
1	NE	Caboose	N100	13	50 6	9 1	7 4	57	.....	10 4	14	.....	14	2 8	6 8	.....	110	1
2	NE	Caboose	N100	15	50 6	9 1	7 4	57	.....	10 4	14	.....	14	2 8	6 8	.....	110	1
3	NE	Caboose	N100	17	50 6	9 1	7 4	57	.....	10 4	14	.....	14	2 8	6 8	.....	110	1
4	NE	Caboose	N100	56	50 6	9 1	7 4	57	.....	10 4	14	.....	14	2 8	6 8	.....	110	1
5	NE	Caboose	N100	59	50 6	9 1	7 4	57	.....	10 4	14	.....	14	2 8	6 8	.....	110	1
6	NE	Caboose	N100	900-905	30	8 8	6 11	41 8	.....	10 8	13 6	.....	15 4	.....	.....	.....	110	6
7	XP	Box, End Doors: Width 8'2" & Height 10'2", Removable Shipping Containers, (Heat Exchangers)	A101	27480-27491	40 6	9 2	10 6	44 4	9 4	10 6	13 10	14 5	15	8	9 10	3903	100	12
8	XP	Box, End Doors: Width 9'6" & Height 8'6", Removable Shipping Containers, (Heat Exchangers)	A606	29010-29024	59 9	9 5	9 9	65 6	9 11	10 8	12 1	14	14 9	27	8 6	5487	164	15
9	XP	Box, End Doors: Width 9'6" & Height 8'6", Removable Shipping Containers, (Heat Exchangers), 15" Freightmaster End of Car Cushioning	A606	29300-29314	59 9	9 5	9 9	67 10	9 11	10 8	12 1	14	14 9	27	8 6	5487	161	15
10	FMS	Flat, 58., Load Limit at Center of Car, (Heavy Gun Mounts)	F211	32082	40	10 6	.....	46 2	.....	10 6	5 8	3 11	5 8	.....	.....	.....	140	1
11	FMS	Flat, 58., Load Limit at Center of Car, (Heavy Gun Mounts)	F211	32083-32087	40	9 1	.....	43 2	.....	10 2	3 8	3 8	5	.....	.....	.....	140	5
12	FM	Flat, Heavy Duty	F502	30816-30864	54	10 6	.....	57 4	.....	10 7	4 2	4 2	4 2	.....	.....	.....	200	543

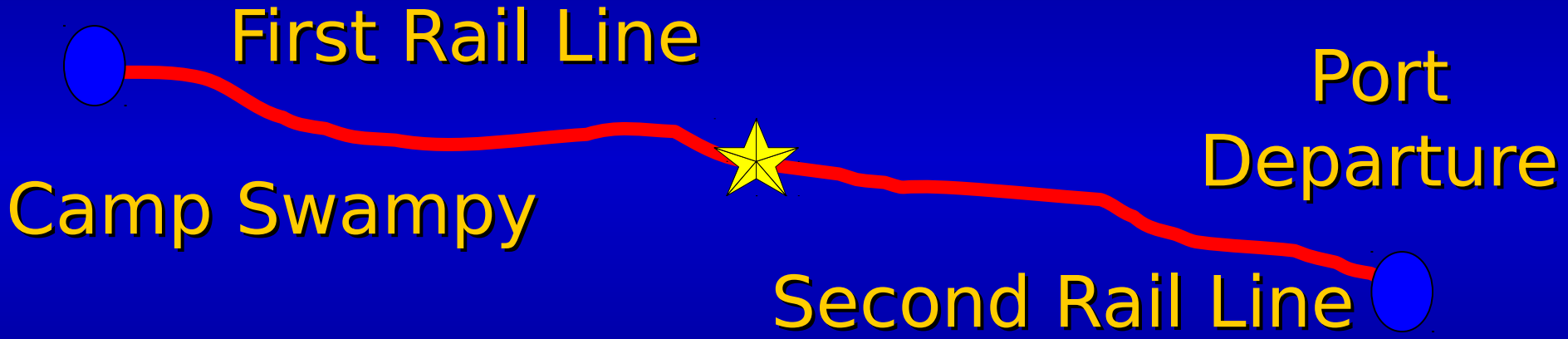
Railcars

- There are several types of railcars used for military exercises and deployments
  - Open Top Cars
    - Flat Cars
    - Gondolas

Railcars (Cont)

- Closed Cars
  - + Box car
- Specialty Cars
  - + Multilevel
  - + Heavy lift
  - + TOFC

ITO Requests Rail Routing from MTMC



MTMC obtains routing from rail company selected

SUMMARY

On Learning

On Learning

Question 1: Who is responsible for obtaining rail cars for the deploying unit?

Answer 1: The Installation Transportation Officer

On Learning

Question 2: What established rules govern all rail movements in CONUS?

Answer 2: Association of American Railways (AAR) rules

Rail Loading

Requirements and Procedures

Preparing Unit Equipment for Rail Movement

- The deploying unit is responsible for preparing its equipment for rail movement

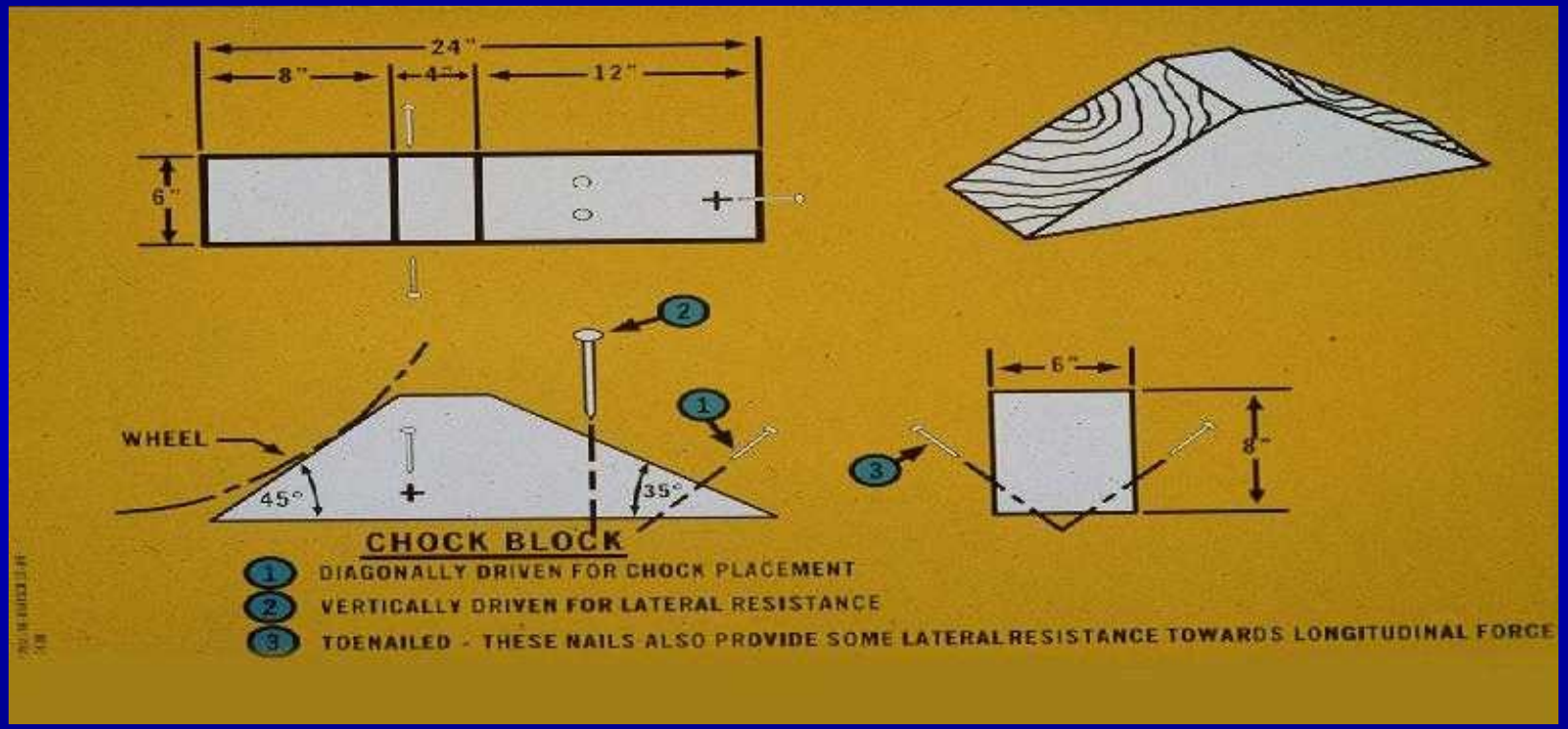
Preparing Vehicles Prior to Loading

- Vehicle Preparation Requirements:
  - All lifting and tiedown shackles att
  - Fuel tanks no more than 3/4 full
  - Canvas and bows removed or banded
  - Windshields Protected

Preparing Vehicle Prior to Loading (Cont)

- Reduce vehicle configuration
- Secure any materials or equipment
- Bands must be approved by AAR.
- Ensure that hood latches are functional and secure.

Blocking and Bracing Materials



- Blocking & bracing materials are used to prevent cargo from shifting

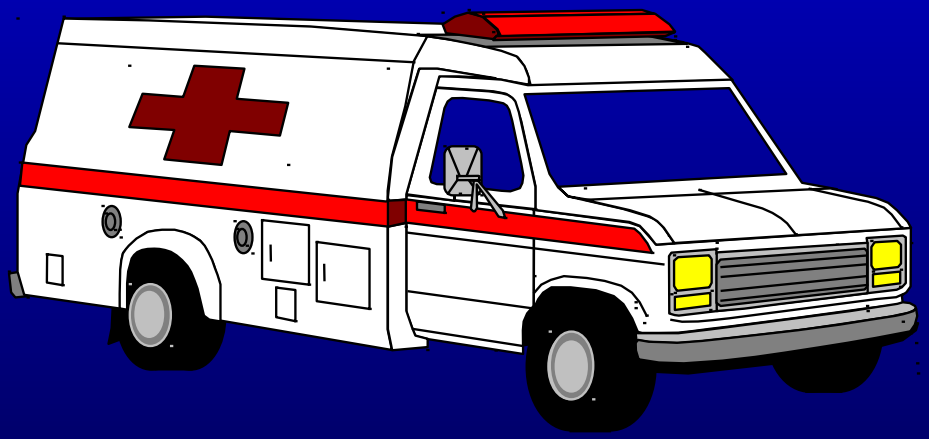
Rail Site Facilities

Lighting

Medical support

Rail Site Facilities (Cont)

- Safety Procedures
- Command and control facilities
- Lighting
- Latrine facilities
- Messing
- Medical support



Safety Requirements

- Appoint Safety OIC or NCOIC
- Qualified and properly equipped medical personnel on site
- Brief all soldiers on established safety procedures:
  - Avoid electrical wires, poles, switches
- Never walk between or backward on rail cars
- Running & jumping between cars is prohibited

Safety Requirements (Cont)

- No sleeping in or around cars
- All personnel stay clear of main track
- Personnel stay clear of rail cars when vehicles are moving on cars
- Minimum speed is used when driving vehicle onto railcars.

Safety Requirements (Cont)

Ground guides are positioned one rail car ahead of the railcar to be loaded

- Ground guides escort all vehicles onto ramp and rail car, and use proper hand and arm signals.
- Ground guides stay in clear view of driver at all times.

Rail Site

- Rail site must be clean and free of debris.
- Ensure spanners are available.
- Ensure that MHE is on site for equipment tha requires MHE support

Inspection of Railcars

- Rail cars are inspected prior to being positioned at final loading locations
- Purpose of inspection is to determine the cars suitability for the intended equipment/vehicle loads
- After railcars are accepted, Military accepts full responsibility to comply with AAR rules

Inspection of Railcars (Cont)

- Deploying unit and ITO representative inspect railcars prior to loading equipment. Checks include:
  - Doors on closed cars open and close and interior is free of debris
  - Open car decks are free of residue and old blocking & bracing materials
  - Chains are present and serviceable on chain rail cars

Association of American Railroads (AAR) Loading Rules

AAR Loading Rules

- The AAR makes no provision to protect cargo from the elements or forms of damage

AAR Loading Rules (Cont)

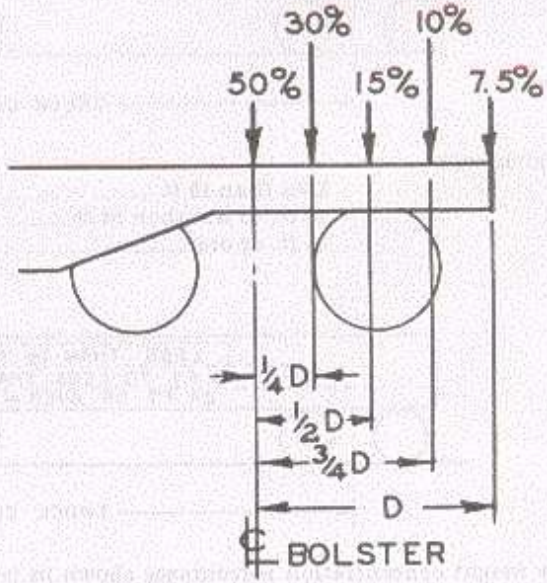
- The loading rules are applicable to both the railroad and the ITO.
  - Loads can not exceed railcar limits

AAR Loading Rules (Cont)

- Do not exceed one half the load limit of the car on any axle.

Permissible Concentrated Load
Percent of Stenciled Load Limit

50
80
15
10
7.5



SKETCH 2
LOAD CONCENTRATED AT SPECIFIC POINTS

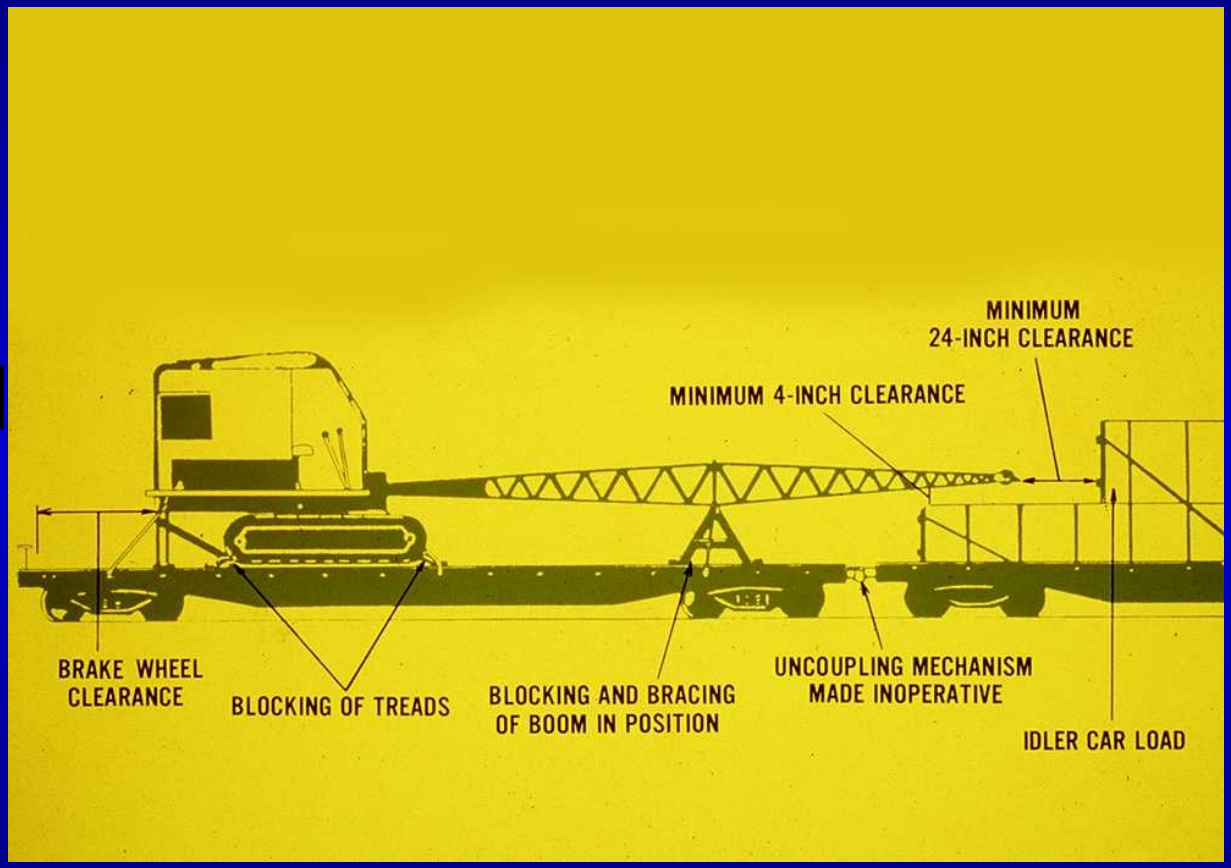
AAR Loading Rules (Cont)

- Balance load evenly on car
- When loading large and heavy items not
- covered by rules, load largest dimensio
- and heaviest weight on the floor to
- prevent tipping
- Secure items having a high center of bala

to prevent tipping while in transit.

AAR Loading Rules (Cont)

- Use idler cars when loads extend beyond the end of the loaded car.



- Do not place heavy equipment on trailers that will ride on flat cars or TOFC

Vehicle and Equipment Loading

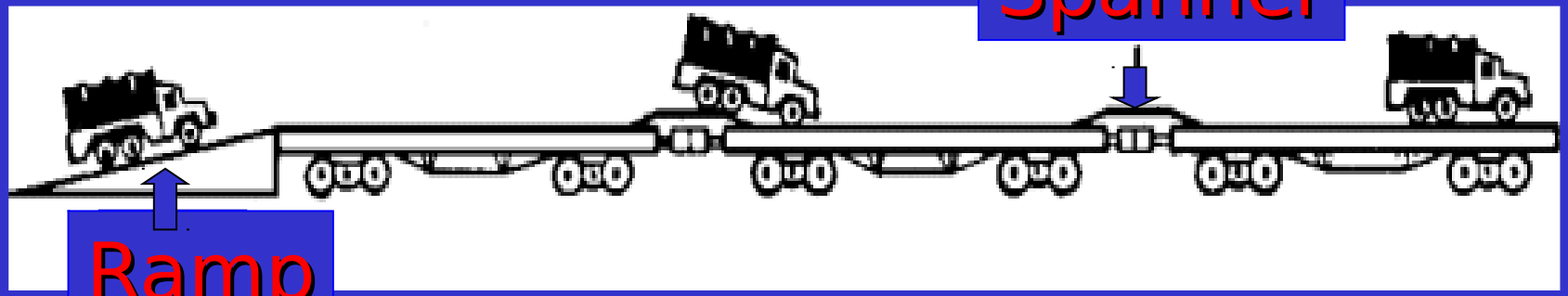
- Prior to loading, stage vehicles in the order th will be loaded
- Most common loading procedure is "circus" method
  - Flatcars equipped with spanners used as roadbed
  - All vehicles loaded on rearmost car, then moved forward to assigned locations

Vehicle and Equipment Loading (Cont)

Vehicles being loaded by the “circus” method

Loading

- Prior to loading the vehicle onto railcar, all personnel with the exception of the driver must dismount vehicle



- Rail guide should be one car ahead of vehicle or positioned not to be caught between vehicles

Loading (Cont)

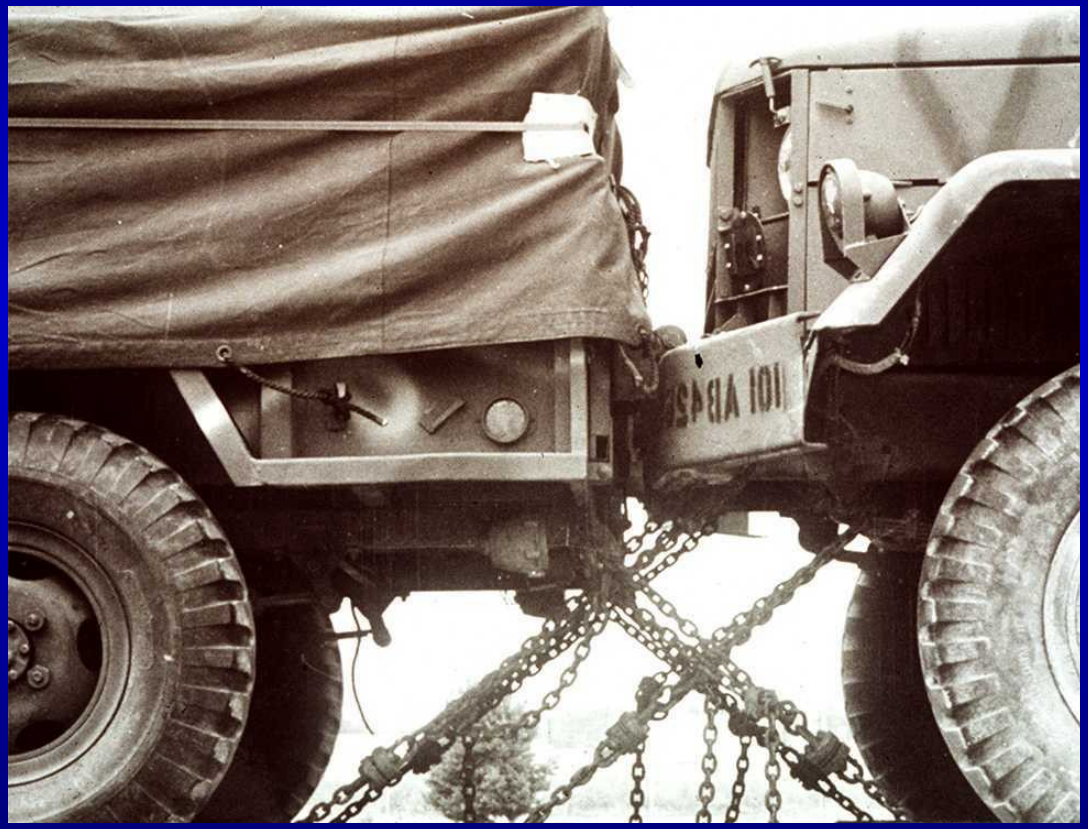
- Ensure spanners are properly positioned & capable of supporting the heaviest load anticipated
- At least 12” of spanner should overlap the rail car de
- Most track vehicles don’t require spanners between rail

Loading (Cont)

- When driving on spanners, maintain a constant speed.
- Avoid jamming on brakes or reversing

Vehicle Spacing

- Vehicles require a minimum of 10 inches of space between vehicles.



Wrong spacing

Loading Multilevel Cars

- Exercise caution when loading vehicles on or moving vehicles through multilevel rail car Check deck heights
- Decks may be different heights causing vehicle to strike the upper deck.

Setting Vehicles

- After positioning vehicle on railcar, vehicle operator:

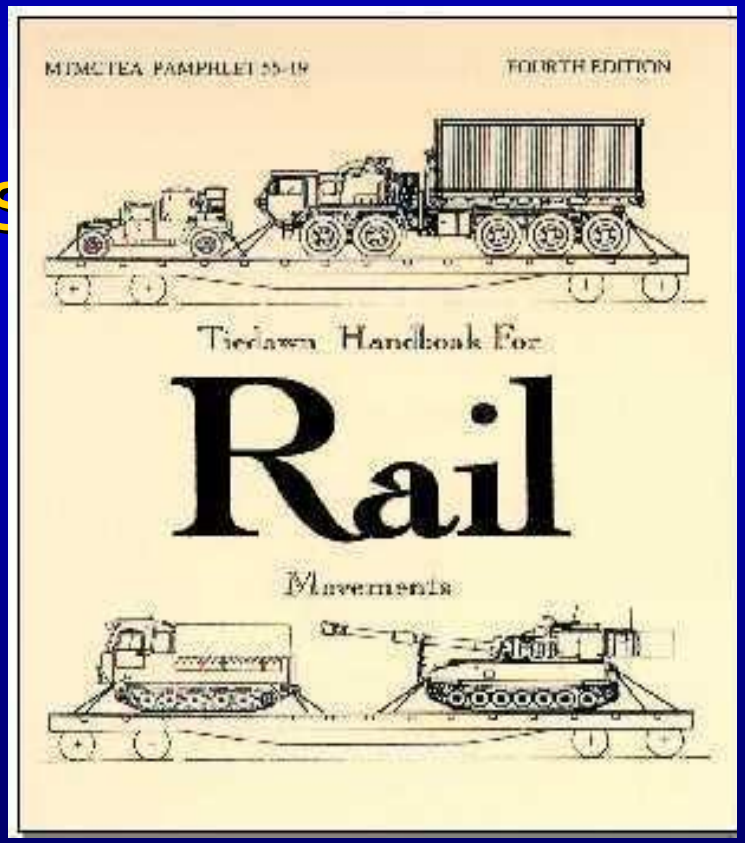
  Places transmission in neutral

  Sets parking brake

  Places battery switches in “off” position

Tie-down Procedures

- When securing vehicles use these techniques.
  - Inspect chain assemblies and components.
  - Apply chains in pairs
  - Turntable type winches



Tie-down Procedures (Cont)

- Ensure proper wire or chain tension
  - Place tension on wire rope to allow no more than one inch deflection.

Tie-down Procedures (Cont)

- Secure excess wire rope or chain to the tension bearing part of the wire rope.
- On chain devices, secure open-faced hooks to chain link with wire or nylon tie strap.
- Lock chain-tightening device with wire.
  - Turnbuckles must have jamnuts tightened wrench-tight using two wrenches

Tie-down Procedures (Cont)

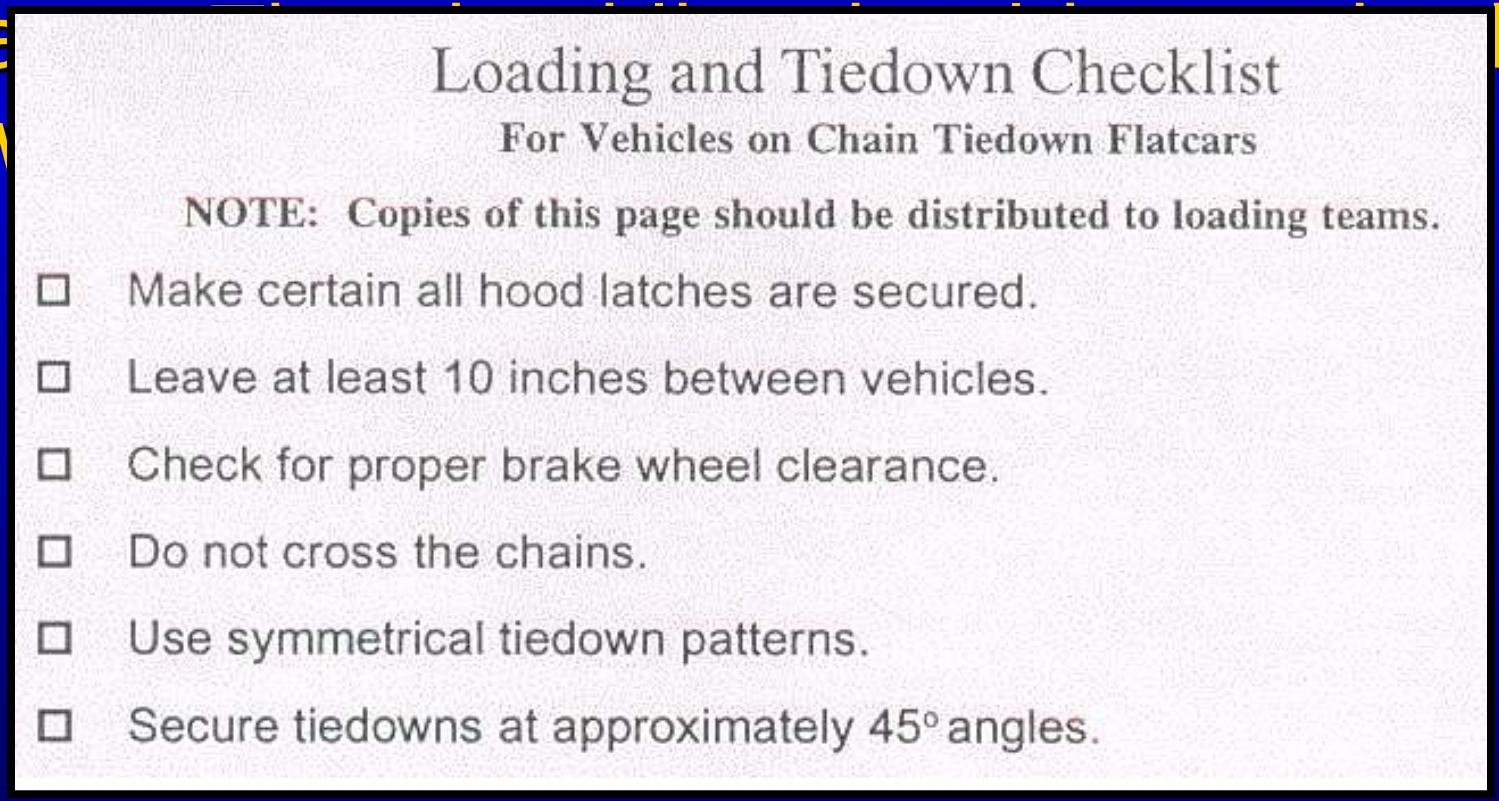
- Secure chain through tie-down points at forty-five degree angle.
- Pull chain tight as possible, ensuring that there are no twists or kinks, and secure chain hook to chain.

Tie-down Procedures (Cont)

- Hand tighten turnbuckles first, then continue to tighten with open end or crescent wrench until 1/8 inch of the rubber compression ring shows.
  - Store used chain assemblies in the rail car channel

Loading and Tie-down Checklist

- Checklists should be distributed to the loading tea[illegible]he follow[illegible]



Loading and Tiedown Checklist

For Vehicles on Chain Tiedown Flatcars

NOTE: Copies of this page should be distributed to loading teams.

- ☐ Make certain all hood latches are secured.
- ☐ Leave at least 10 inches between vehicles.
- ☐ Check for proper brake wheel clearance.
- ☐ Do not cross the chains.
- ☐ Use symmetrical tiedown patterns.
- ☐ Secure tiedowns at approximately 45° angles.

Loading and Tie-down Checklist (Cont)

- Checklist Cont:

- ☐ Seat and lock chain anchor or winch.
- ☐ Secure shackle in tiedown provision with wire tie or cotter pin.
- ☐ Pull chain tight and attach hook above the compression unit.
- ☐ Tighten chain.
- ☐ Use appropriate tool.
- ☐ Make sure chain is not kinked or binding.

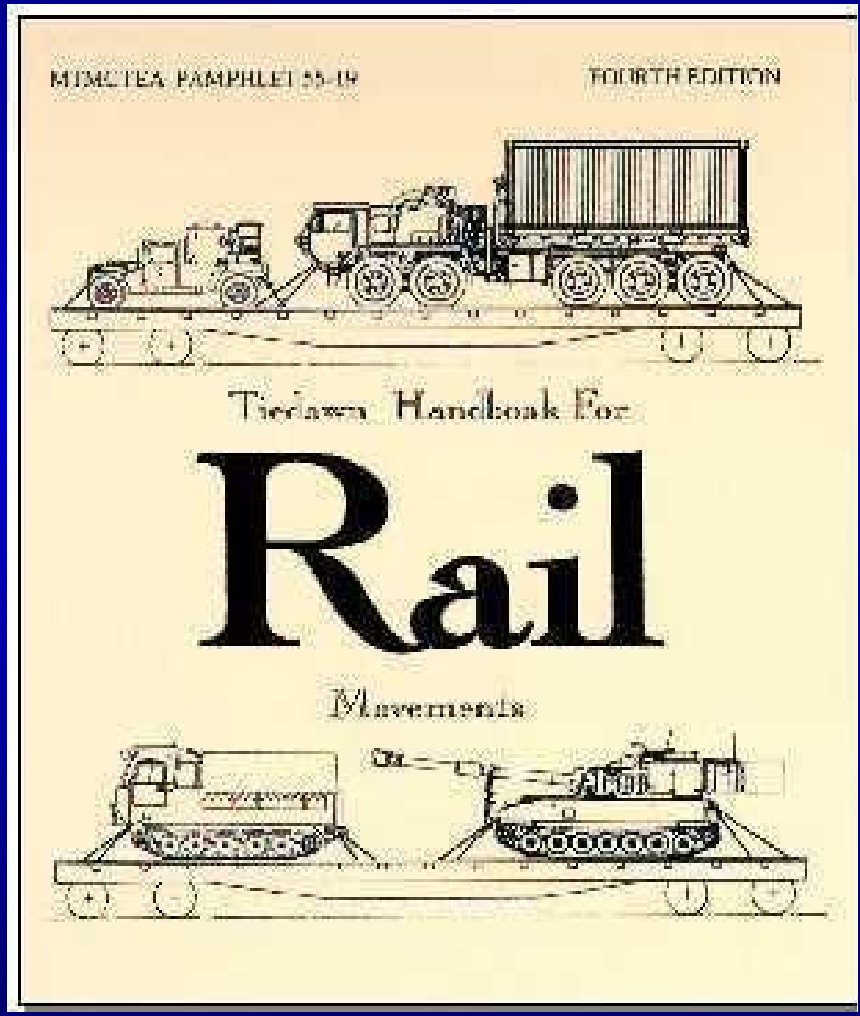
Loading and Tie-down Checklist (Cont)

- Checklist Cont:

- ☐ Secure hooks with wire or nylon tie straps.
- ☐ Make sure turnbuckles are wired or locked.
- ☐ Tighten jamnuts with two wrenches.
- ☐ Do not secure chains to axles or springs unless figure shows to.
- ☐ Make certain turrets and guns, radiator doors, side skirts, outriggers, crane booms, expansible van bodies, and so forth are secured from extending up or over the side of the flatcar.

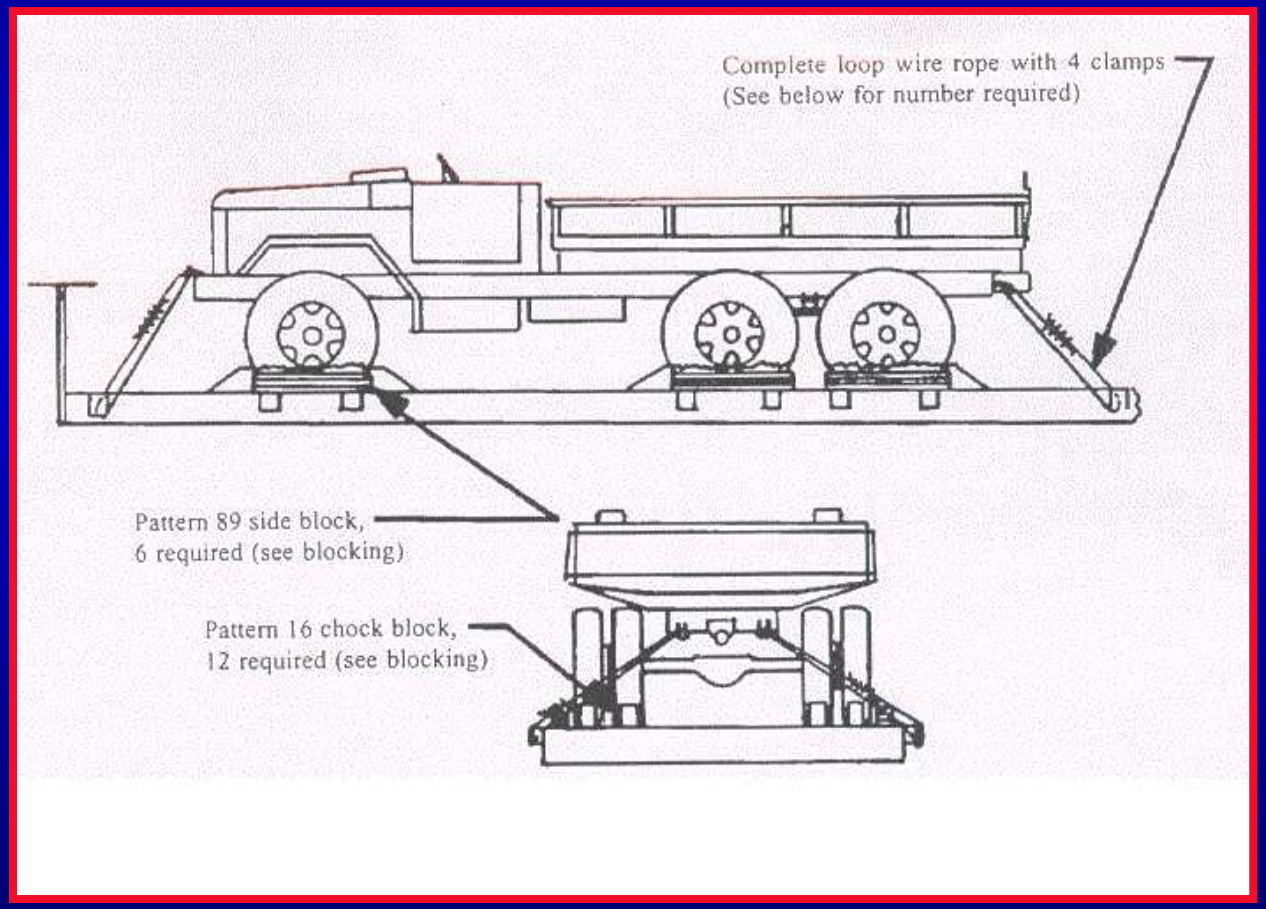
Tie-down Illustration

- Appendixes B and C provide tie-down procedures for the transport of military vehicles



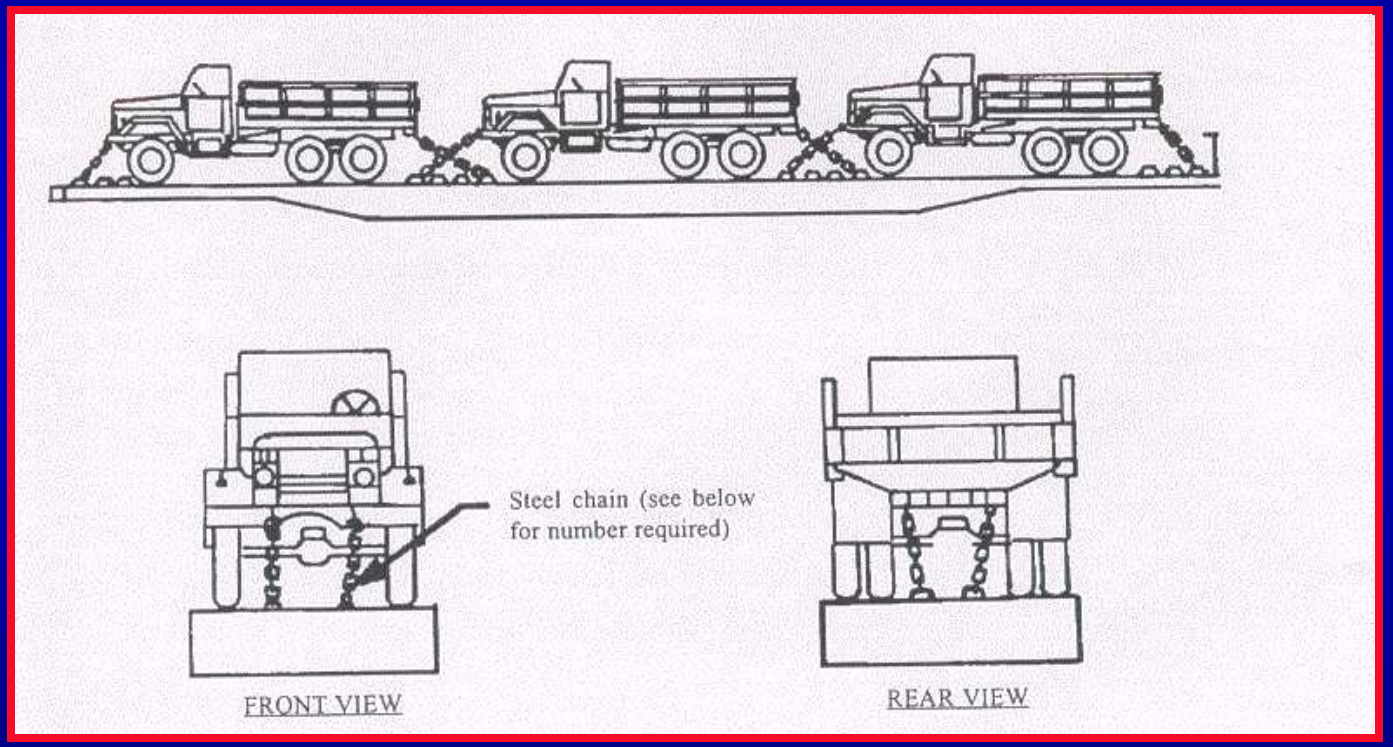
Three Axle Vehicle -- Tie-down Illustration

- 6 X 19 WRC IPS Wire Rope



Three Axle Vehicle -- Tie-down Illustration (Cont)

- Alloy Steel Chain



Final Inspection

- Final inspection is made after the railcars are loaded to ensure that the contents are loaded, blocked and braced in compliance with AAR loading rules
- The rail representative is the final approving authority for accepting

SUMMARY

On Learning

On Learning

Question 1: What reference provides a checklist for loading and tying down unit equipment on railcars?

Answer 1: MTMCTEA Pam 55-19, Tiedown Handbook for Rail Movements

On Learning

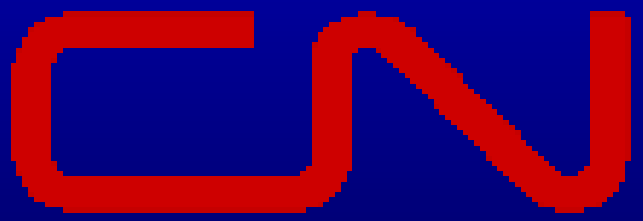
Question 2: What is the minimum amount of space that must be maintained between vehicles that are secured to the railcar deck?

Answer 2: AAR rules require a minimum of 10 inches between vehicles.

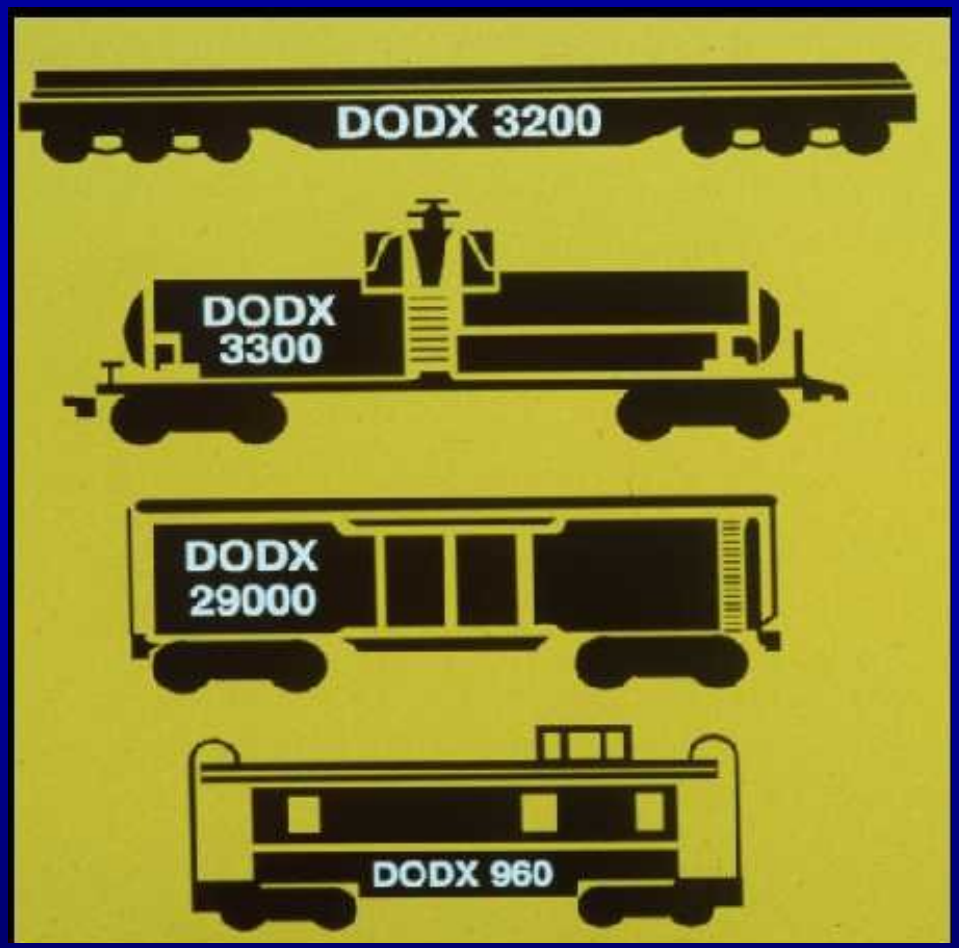
Rail Equipment:

Characteristics and Capabilities

Association of American Railroads



Defense Freight Rail Interchange Fleet



Flatcars:
- General Purpose 1477
- Special Purpose 139

Tank cars:
- General Purpose 375
- Special Purpose 18

Boxcars:
- Special Purpose 30

Refrigerated 9

Misc cars:
- Escort Cabooses 6
- Guard Cars 5
- Spec Lease 11

TOTAL DODX: 2070

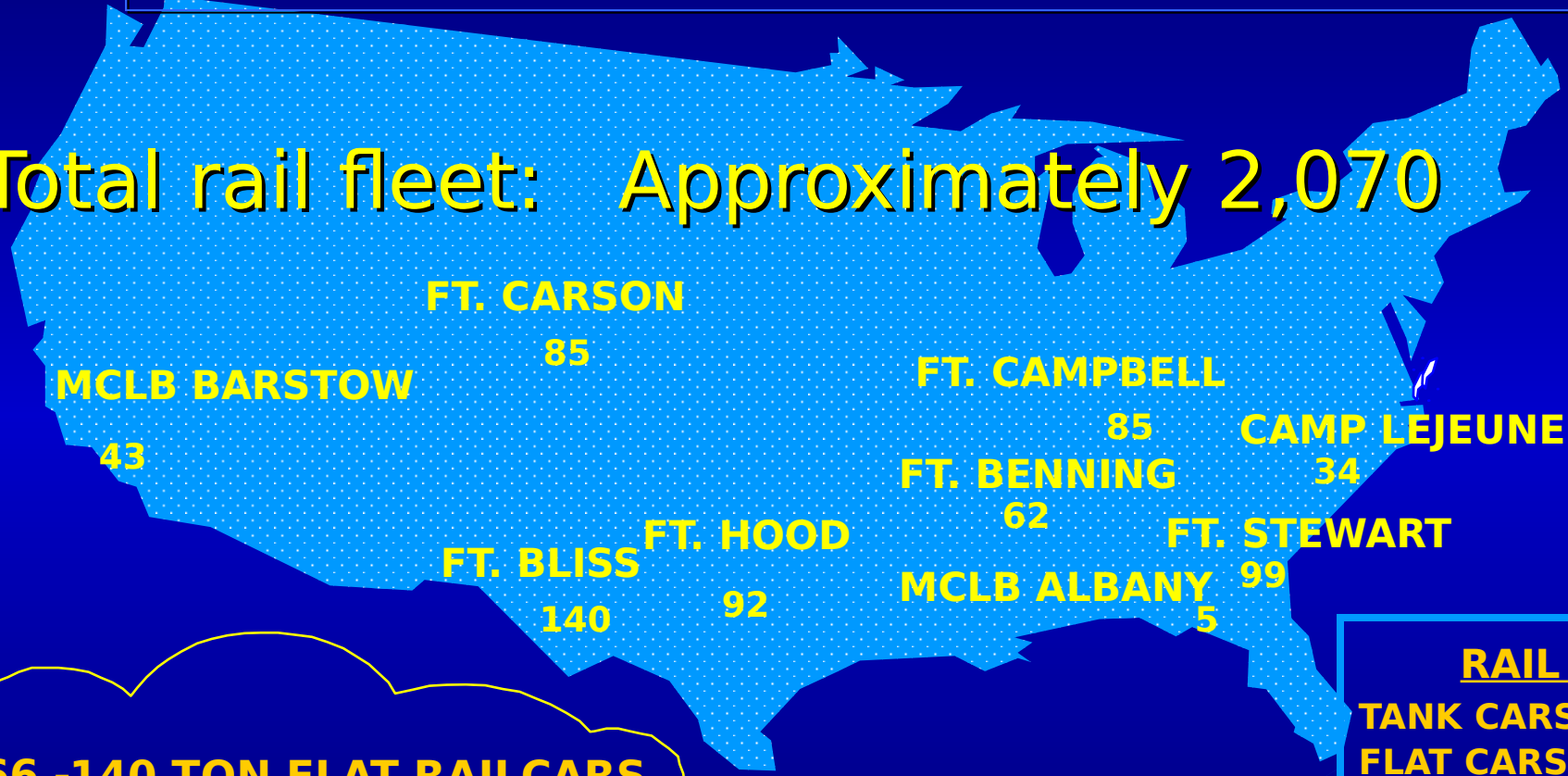
ASMP Railcar Requirements

- DA DCSOPS sets priority on which installation get railcars first.

- Ft Stewart	233	
- Ft Hood		185
- Ft Carson	85	
- Ft Campbell	236	
- Ft Benning	62	

AMCCOM Installations:
198 cars at
12 Ammo Plants

MTMC Managed Railcars

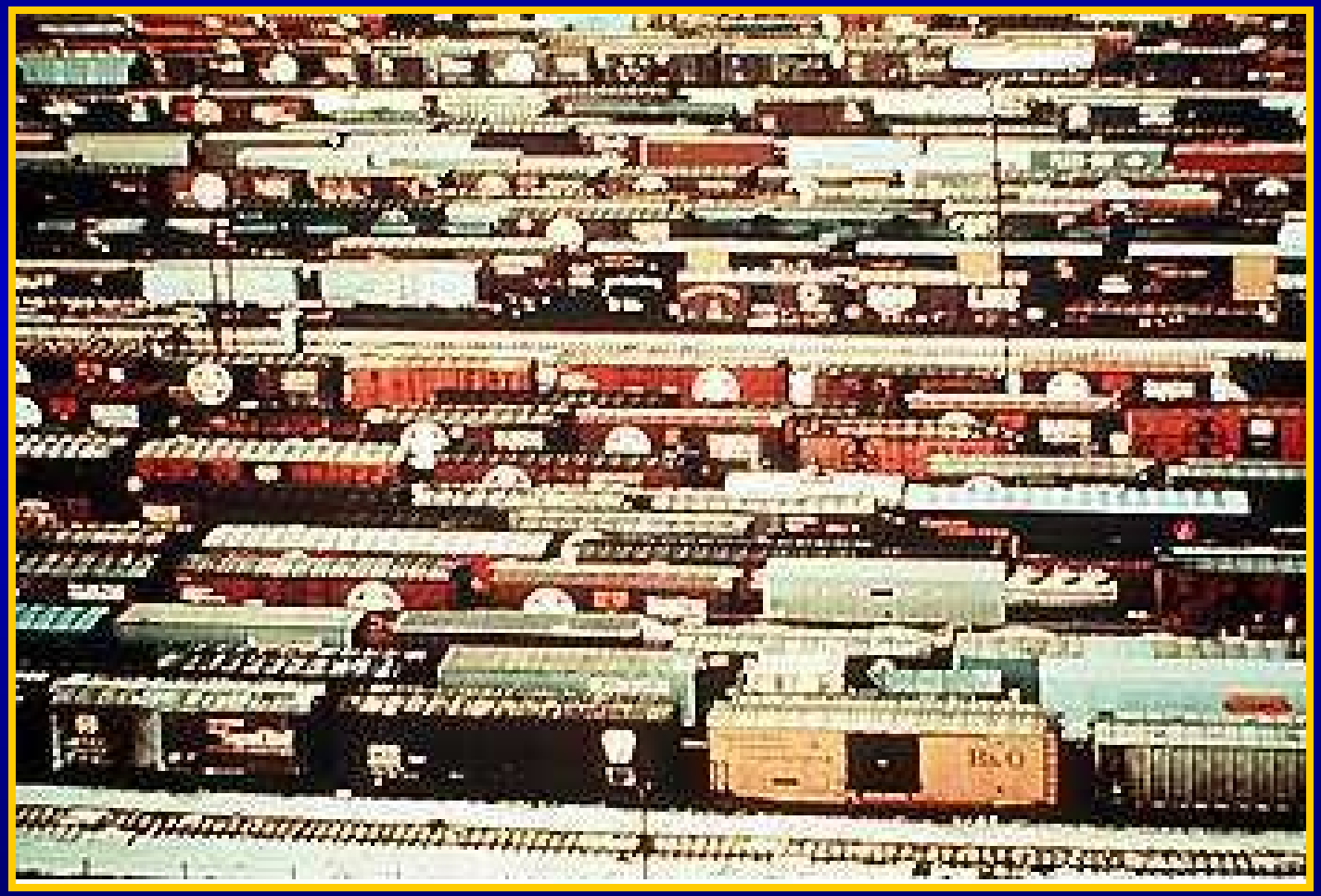


566 -140 TON FLAT RAILCARS
335 -100 TON FLAT RAILCARS
* PRE-ASSIGNED IN ORDER TO RESPOND TO CONTINGENCIES

RAIL FLEET:

TANK CARS:	375
FLAT CARS:	1,477
BOX CARS:	30
REEFERS:	9
CABOOSES:	6
SCHNABEL:	2

Railway Equipment



Boxcars

- US Boxcars in domestic service have a capacity of about 100k lbs., or over 3900 cu feet.
- Ideal for commodities requiring protection from weather or susceptible to pilferage: foodstuffs, medicines,

Tank Cars

Gondola Cars

- If car sides are necessary to keep bulk loads from shifting, use gondola cars

Hopper Cars

- Cars can be either covered or open at the top
- Used for transporting loose bulk commodities

Flat Cars

- Ideal for transporting military cargo and vehicles
- Equipment may be carried on DOD or common carrier flatcars

68 Foot Flat Car

- 4000 Series
  - 140 Ton Capacity
  - Contains integral spanner & chains

89 Foot Rail Car

- 4200 - Series
  - 85 -100 ton capacity
  - Used for wheeled and light tracked vehicles

Conventional Flat Cars

Chain Tie-down Flat Cars

Multilevel Flat Cars

Multilevel Flat Cars (Cont)

- Ramps are used to load the upper levels

Trailer on Flatcar (TOFC)

Container on Flatcar (COFC)

Switch Engines

- Used to switch rail cars in and out of a loading area.

Line Haul Locomotives

Caboose

SUMMARY

On Learning

On Learning

Question 1: When rail cars arrive on site, who is responsible for inspecting the railcars prior to accepting the cars from the rail carrier?

Answer 1: The ITO is responsible for the initial inspection prior to accepting the railcars

On Review

Question 1: What type of railcar is ideal for transporting wheeled and tracked vehicles and oversized equipment?

Answer 1: Flat Cars

On Review

Question 2: Who is responsible for providing the deploying unit with spanners for rail loading operations?

Answer 2: The Installation Transportation Officer.

On Review

Question 3: Who is the final approving authority for all rail loads prior to train movement?

Answer 3: Rail carrier representative.

On Review

Question 4: What is the procedure used in the “circus loading” of unit equipment on railcars?

Answer 4: The “circus loading” method uses flatcars as a roadbed with spanners between the railcars. Vehicles are loaded from the rear most railcar and then moved forward to their assigned locations.

On Review

Question 5: What enhanced rail deployment capability does the Defense Freight Rail Interchange Fleet (DFRIF) provide?

Answer 5: Pre-positioning of railcars at selected installations provides flexibility to quickly load military equipment for deployment operations.